



Claims

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1. A fuel cell assembly comprising:
a membrane electrode assembly;
a bipolar separator plate; and
independently-acting compliant electrical contacts disposed between said membrane electrode assembly and said bipolar separator plate.
2. A fuel cell stack, comprised of a first assembly according to claim 1 and a second assembly according to claim 1, wherein the independently-acting compliant electrical contacts of said first assembly are in electrical contact with the membrane electrode assembly of said second assembly.
3. The fuel cell assembly according to claim 1 wherein said independently-acting compliant electrical contacts comprises springs.
4. The fuel cell assembly according to claim 1, wherein said springs are inverted-V shaped.
5. The fuel cell assembly according to claim 1, wherein said springs are S-shaped.
6. The fuel cell assembly according to claim 1, wherein said springs are Z-shaped.
7. The fuel cell assembly according to claim 1, wherein said springs are omega-shaped, wherein said omega-shaped springs have a height and a tapered middle section, said tapered middle section having a width, and wherein said width is at least 50% as great as said height.

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8. The fuel cell assembly according to claim 1, wherein said independently-acting compliant electrical contacts are formed into an array having a length, wherein said membrane electrode assembly has a length, and wherein said length of said array is approximately equal to said length of said membrane electrode assembly.

9. The fuel cell assembly according to claim 1 wherein said independently-acting compliant electrical contacts are formed into an array having a width, wherein said membrane electrode assembly has a width, and wherein said width of said array is approximately equal to said width of said membrane electrode assembly.

10. The fuel cell assembly according to claim 8 wherein said independently-acting compliant electrical contacts are formed into an array having a width, wherein said membrane electrode assembly has a width, and wherein said width of said array is approximately equal to said width of said membrane electrode assembly.

11. A fuel cell assembly comprising:
a membrane electrode assembly;
a non-bipolar separator plate; and
independently-acting compliant electrical contacts disposed between said membrane electrode assembly and said non-bipolar separator plate.

12. Independently-acting compliant electrical contacts for maintaining electrical contact between a bipolar separator plate and a membrane electrode assembly in a fuel cell stack.

13. The independently-acting compliant electrical contacts according to claim 12, wherein said independently-acting compliant electrical contacts comprise springs.

14. A method for maintaining electrical contact between a bipolar separator plate and a membrane electrode assembly in a fuel cell stack comprising placing independently-acting compliant electrical contacts between said bipolar separator plate and said membrane electrode assembly.

15. A fuel cell assembly comprising:
a membrane electrode assembly;
a bipolar separator plate; and
flexible means for making electrical contact between said membrane electrode assembly and said bipolar separator plate.

16. A fuel cell assembly comprising:
a membrane electrode assembly;
a bipolar separator plate; and
flexible electrical contact members disposed between said membrane electrode assembly and said bipolar separator plate.

17. The fuel cell assembly according to claim 16, wherein said flexible electrical contact members comprise a plurality of springs, whereby said springs maintain independently-acting compliant electrical contact between said membrane electrode assembly and said bipolar separator plate.

18. A fuel cell assembly, comprising:
a bipolar separator plate, said bipolar separator plate having a first side and a second side;
a membrane electrode assembly, attached to and sealed to said first side;
and

independently-acting compliant electrical contacts attached to said second side.

19. A fuel cell stack, comprised of a first assembly according to claim 18 and a second assembly according to claim 18, wherein the independently-acting compliant electrical contacts of said first assembly are in electrical contact with the membrane electrode assembly of said second assembly.

20. A fuel cell assembly comprising:
a membrane electrode assembly;
a bipolar separator plate; and
an independently-acting compliant electrical contact disposed between said membrane electrode assembly and said bipolar separator plate.

21. A fuel cell assembly comprising:
a membrane electrode assembly;
a bipolar separator plate;
first means for maintaining electrical contact between said membrane electrode assembly and said bipolar separator plate; and
second means for sealing said membrane electrode assembly with said bipolar separator plate, wherein said second means functions independently from said first means.

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